Abdallah Abouabdallah

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Software engineer specialized in data engineering, MLOps infrastructure, and distributed systems using Node.js, Python, PostgreSQL, Docker and AWS. Proven experience building high-throughput data pipelines, containerized ML deployments, and scalable microservices. Healthcare domain expertise with focus on GDPR-compliant solutions.

Technical Skills: JavaScript/Node.js, Python, PostgreSQL, MongoDB | Kubernetes, RabbitMQ, Docker, Git, Linux | MLOps & DevOps pipelines

Education

FH Aachen University of Applied Sciences — Aachen, Germany
Master of Science in Applied Data Science and Medical Engineering. — *2024 - 2026*

FH Aachen University of Applied Sciences — Aachen, Germany
Bachelor of Engineering in Medical Engineering with Computer Science Minor — *2020 - 2024*

Experience

Uniklinik RWTH Aachen — Aachen, Germany
Software Engineer — *2024 - Present*

- Developed scalable data pipelines for cleaning and standardizing large healthcare datasets; integrated LLM APIs for initial labeling and fine-tuned ML models to ensure compliance and usability in clinical research.
- Optimized legacy ML workflows into containerized MLOps setups using Docker, enabling reproducible deployments and cross-lab validations.
- Built centralized infrastructure with VPS-PostgreSQL integration; automated data migration, deployed secure collaborative environments and improved team efficiency.
- Built full-stack Node.js/React authentication portal for VPS access; integrated multimodal LLMs for data analysis, supporting collaborative predictive modeling in distributed systems.

Forschungszentrum Jülich — Jülich, Germany
Research Software Engineer — *2022 - 2023*

- Analyzed 3D cellular images from confocal microscopy, focusing on high-precision segmentation.
- Applied ML algorithms to classify cellular objects across datasets.
- Designed visual reports for interdisciplinary teams, aiding critical decision-making.

Medical & Technical Standards

Medical Imaging: DICOM, NIfTI, TIFF microscopy formats, HL7 FHIR.

Regulatory Frameworks: EU MDR, IEC 62304 (Medical device software), ISO 13485 (Quality management).

Data Protection: GDPR compliance, pseudonymization/anonymization for clinical data.

Achievements

1st Place - Telekom GmbH Hackathon (2025): Doc2Chat: Intelligent document interaction system using RAG and LLM agents for natural language querying of complex documents. (GitHub)

Selected Projects

Distributed Data Collection System: Built scalable microservices architecture for automated web data aggregation. Implemented rate limiting, proxy rotation, concurrent request handling with RabbitMQ, and PostgreSQL storage.

Cross-Institutional ML Pipeline: Developed containerized framework for reproducible ML model deployment across clinical research sites. Addresses data heterogeneity and ensures GDPR-compliant external validation with minimal technical overhead for partner institutions.

Production LLM Application: Full-stack document retrieval system with agentic workflows. Backend uses vLLM for inference optimization and RAG for context-aware responses. Containerized architecture enables deployment across diverse clinical IT environments.

3D Liver Tumor Segmentation: Implemented cascaded Res-Attention-UNet architecture for automated tumor delineation in CT imaging. Optimized for clinical workflow integration with DICOM compatibility and volumetric analysis reporting.

Languages

Proficiency: German (C1), English (fluent), French (fluent), Arabic (fluent).